

May 9, 2023

Mr. Andrew Safran
Centerbrook Architects and Planners
67 Main Street, PO Box 955
Centerbrook, CT 06409

SUBJECT: Rooftop Cooler Installation – Acoustic Evaluation
Sherrill Hall, Lesley University – Cambridge, MA

Dear Mr. Safran,

At your request, Cavanaugh Tocci has evaluated environmental sound associated with the proposed rooftop cooler installation at Sherrill Hall at Lesley University in Cambridge, Massachusetts. The following report assesses the potential Project sound impacts with respect to appropriate state and local noise regulations.

Environmental Noise Regulations

Environmental sound produced by this project is limited by both state and local noise regulations. These regulations are discussed below.

State of Massachusetts Department of Environmental Protection

Commonwealth of Massachusetts requirements under 310 CMR Section 7.10 qualitatively prohibit noise under some circumstances. Interpretation is provided in the Massachusetts Department of Environmental Quality Engineering's Policy 90-001 dated February 1, 1990; and in the Department of Environmental Protection (DEP) Form BWP AQ Sound. The Massachusetts policy limits new noise intrusions to 10 dBA over the existing ambient (L_{90}) sound level. Tonal sound, defined as any octave band level which exceeds the levels in adjacent octave bands by 3 dB or more, is also not allowed. These DEP noise guidelines are applicable both at the property lines and at the nearest inhabited buildings.

The DEP noise policy enumerated above is strictly applied to protect residences, other sensitive receptors (e.g. schools, hospitals), and land that could be developed for acoustically sensitive use. However, a new noise source that would be located in an area that is not likely to be developed for residential use in the future, or in a commercial or industrial area with no sensitive receptors may not be required to mitigate noise impact on those areas, even if projected to produce noise levels at the facility's property line which exceed existing background sound levels by more than 10 dBA.

City of Cambridge Noise Ordinance

Chapter 8.16 of The Municipal Code of the City of Cambridge provides regulations for environmental noise produced by this project. This ordinance defines maximum A-weighted and octave band sound level limits for four land use categories. These limits are presented below in Table 1 and apply at receptor property lines.

Table 1: City of Cambridge Zoning District Noise Standards

Octave Band Center Frequency (Hz)	Residential Area		Residential in Industrial Area		Commercial Area	Industrial Area
	Daytime	Other Times	Daytime	Other Times	Anytime	Anytime
31.5	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	56	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
A-weight (dBA)	60	50	65	55	65	70

“Daytime” means the period between the hours of 7:00 a.m. to 6:00 p.m. daily except Sunday and holidays

Project Acoustic Requirements

The project site and the nearest residences are located in a C-2 residential zone. The project equipment is expected to operate at night and during Sundays and Holidays, so the “other times” limit of 50 dBA applies.

Based on our experience measuring background sound levels in this area, it is our opinion that complying with the City of Cambridge Noise Ordinance overall sound level limit of 50 dBA for residential receptors will also assure compliance with the Mass DEP Noise Policy.

Project Noise Analysis

The proposed facility equipment was modeled using CadnaA, an environmental sound monitoring program that implements the ISO 9613 standards for outdoor sound propagation. The model accounts for topography, ground cover, and shielding and reflections due to structures.

Sound sources used in the analysis are two roof-mounted Güntner hydroBLU adiabatic fluid coolers (1475 GPM, sound power 95 dBA). Sound emission data has been provided by the project engineers. The coolers are enclosed by a visual screen. This configuration is shown in Figure 1.

Sound levels have been estimated at the façades of five residential properties, indicated R1-R5 in Figure 1. Table 2 presents the results of the acoustic modeling. Modeled sound levels are in compliance with the City of Cambridge Noise Regulation overall limits, and noise controls are not necessary.

Table 2: Summary of Estimated Sound Levels (dBA)

Receptor ID	Location	Cambridge Noise Limit	Facility Sound Level
R1	12 Mason Street	50	45
R2	85 Brattle Street		36
R3	83 Brattle Street		48
R4	5 Phillips Place		46
R5	9 Phillips Place		44

Conclusion

As indicated in Table 2, the facility as currently designed is expected to produce sound levels that comply with the City of Cambridge Noise Regulation. In addition, our review of the data indicates that Project sound would comply with the community noise policies of the Massachusetts Department of Environmental Protection. Therefore, it is our opinion that environmental sound produced by the proposed Project will have a negligible impact in the surrounding community and would comply with all appropriate noise regulations.

Sincerely,
CAVANAUGH TOCCI



Bradley M. Dunkin, Associate Principal Consultant
23093/Sherrill Hall Chiller Install environmental sound study DRAFT2.docx

FIGURES

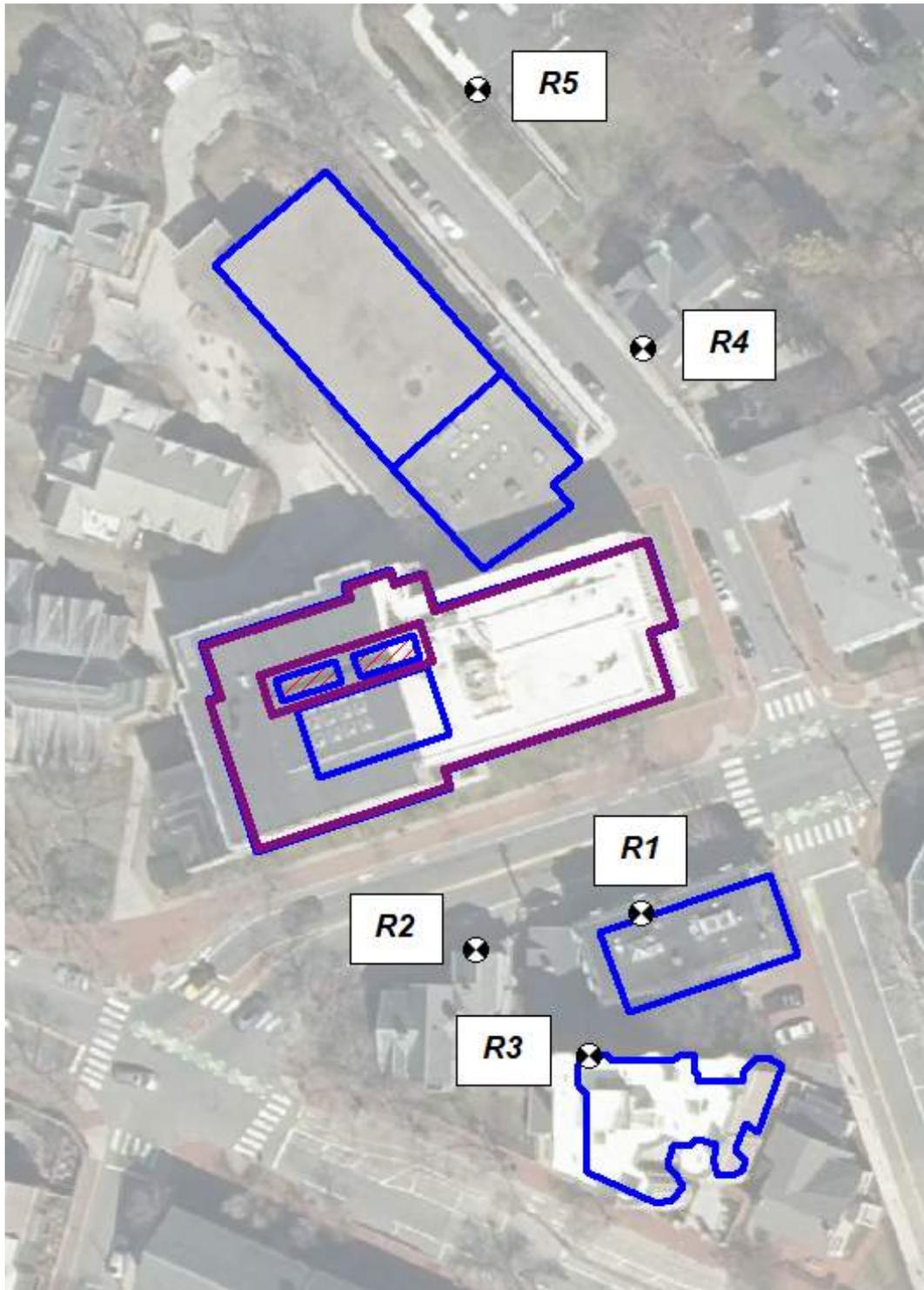


Figure 1